

Designing Craters: Creating a Deep Impact

Looking for Patterns and Making Predictions

STUDENT HANDOUT PART 2

DIRECTIONS

In this activity, you will find mathematical formulas to represent the lines on your graph and use those mathematical formulas to make predictions about what the resulting crater might be if you used values far outside the range of those we were able to test in class.

1. Choose three graphs you have with a straight-line pattern. One should be a graph of the effects of mass vs. either diameter or depth; one should be velocity vs. either diameter or depth; and the third is completely your choice. Find the $y = mx + b$ formula to represent that line. Show your work.

Graph 1 Title: _____

Formula for Graph 1:

Graph 2 Title: _____

Formula for Graph 2:

Graph 3 Title: _____

Formula for Graph 3:

2. Now pick values for each of your three factors that are much greater than the largest number tested in class. Use the formulas you found above to calculate the crater depth or diameter.

3. Remembering that we want to make a crater with a depth of 50 meters and a diameter of 200 meters, how might you use these formulas to figure out what impactor mass or velocity is needed in order to make a crater of that size? Do the calculation for mass and velocity.

4. Is that our answer? Can we stop there? Why or why not?
